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December 22, 1842.

GEORGE RENNIE, Esq., V.P., in the Chair.

Augustin F. B. Creuze, Esq., and Captain Samuel F. Widdrington, R.N., were balloted for and duly elected Fellows of the Society.

A paper was in part read, entitled "On the Nerves:" by James Stark, M.D., F.R.S.E. Communicated by James F. W. Johnston, Esq., F.R.S., Professor of Chemistry in the University of Durham.

The Society then adjourned over the Christmas recess, to meet again on the 12th of January next.

January 12, 1843.

The MARQUIS OF NORTHAMPTON, President, in the Chair.

1. The reading of a paper, entitled "On the Nerves," by James Stark, M.D., was resumed and concluded.

The author gives the results of his examinations, both microscopical and chemical, of the structure and composition of the nerves; and concludes that they consist, in their whole extent, of a congeries of membranous tubes, cylindrical in their form, placed parallel to one another, and united into fasciculi of various sizes; but that neither these fasciculi nor the individual tubes are enveloped by any filamentous tissue; that these tubular membranes are composed of extremely minute filaments, placed in a strictly longitudinal direction, in exact parallelism with each other, and consisting of granules of the same kind as those which form the basis of all the solid structures of the body; and that the matter which fills the tubes is of an oily nature, differing in no essential respect from butter, or soft fat; and remaining of a fluid consistence during the life of the animal, or while it retains its natural temperature, but becoming granular or solid when the animal dies, or its temperature is much reduced. As oily substances are well known to be non-conductors of electricity, and as the nerves have been shown by the experiments of Bischoff to be among the worst possible conductors of this agent, the author contends that the nervous agency can be neither electricity, nor galvanism, nor any property related to those powers; and conceives that the phenomena are best explained on the hypothesis of undulations or vibrations propagated along the course of the tubes which compose the nerves, by the medium of the oily globules they contain. He traces the operation of the various causes which produce sensation, in giving rise to these undulations; and extends the same explanation to the phenomena of voluntary motion, as consisting in undulations, commencing in the brain, as determined by the will, and propagated to the muscles. He corroborates his views by ascribing the effects of cold in diminishing or

destroying both sensibility and the power of voluntary motion, particularly as exemplified in the hybernation of animals, to its mechanical operation of diminishing the fluidity, or producing solidity, in the oily medium by which these powers are exercised.

2. A letter from Prof. Hanson to G. B. Airy, Esq., F.R.S., A.R., was also read, "On a New Method of computing the Perturbations of the Planets whose eccentricities and inclinations are not small." Communicated by G. B. Airy, Esq., F.R.S.

The author announces that he has found a method by which the absolute perturbations of planets for any given time, with any given eccentricity and inclination of the orbit, may be calculated; and he exemplifies his method by applying it to the computation of the perturbations produced by Saturn on the comet of Encke, in every point of its orbit; a problem of which hitherto there existed no solution.

3. A paper was also in part read, entitled "On the minute structure of the Skeletons or hard parts of the Invertebrata." By W. B. Carpenter, M.D. Communicated by the President.

January 19, 1843.

GEORGE RENNIE, Esq., V.P., in the Chair.

John Gould, Esq., Sir Benjamin Heywood, Bart., and Edward Solly, jun., Esq., were balloted for and duly elected Fellows of the Society.

Captain Edward Belcher, R.N., was balloted for, but not elected a Fellow of the Society.

The following papers were read:—

1. "Variation de la Déclinaison et Intensité Horizontale observées à Milan pendant vingt-quatre heures consécutives le 25 et 26 Novembre, et le 21 et 22 Décembre 1842." Par Prof. Carlini, For. Mem. R.S.

2. The reading of a paper, entitled "On the minute structure of the Skeletons or hard parts of Invertebrata," by W. B. Carpenter, M.D., was resumed and concluded.

The present memoir is the first of a series which the author intends to communicate to the Society, and relates only to the Mollusca; and he proposes, hereafter, to extend his inquiries to the skeletons of the Echinodermata, and the various classes of articulated animals. After adverting to the classifications of shells proposed by Mr. Hatcher and Mr. Gray, from the propriety of which he finds reason to dissent, he proceeds to state the results of his microscopic examination of the texture of shells under the several following heads. First, shells having a prismatic cellular structure,